

TOLUENE

REVISION OF:01-10-89

SHIP TO:

51101027
MC DONNELL DOUGLAS CORP
ATTN: P.A. / HAZARDOUS MAT'L MANAGER
2900 E COVER RD
GATE 5
LONG BEACH CA 90808

ORDER NO: 510550482
PROD NO: 04758106

VAN WATERS & ROGERS INC. 1600 NORTON BLDG. SEATTLE, WA 98104-1564

-----EMERGENCY ASSISTANCE-----

FOR EMERGENCY ASSISTANCE INVOLVING CHEMICALS CALL CHEMTREC
(800) 424-9300.

-----FOR PRODUCT AND SALES INFORMATION-----

CONTACT YOUR LOCAL VAN WATERS & ROGERS BRANCH OFFICE

-----PRODUCT IDENTIFICATION-----

PRODUCT NAME: TOLUENE
COMMON NAMES/SYNONYMS: TOLUOL;
METHYL BENZENE

CAS NO.: 108-88-3
VW&R CODE: T1236

FORMULA: C7 H8
HAZARD RATING (NFPA 49)

DATE ISSUED: 12/88
SUPERCEDES: 08/87

HEALTH: 2
FIRE: 3
REACTIVITY: 0
SPECIAL: NONE

HAZARD RATING SCALE:
0=MINIMAL 3=SERIOUS
1=SLIGHT 4=SEVERE
2=MODERATE

-----HAZARDOUS INGREDIENTS-----

COMPONENT	%	EXPOSURE LIMITS, PPM			HAZARD
		OSHA PEL	ACGIH TLV	OTHER LIMIT	
TOLUENE	>99	200	100	OSHA: 300 PPM CEILING 500 PPM MAXIMUM FOR 10 MIN ACGIH: 150 PPM STEL	FLAMMABLE

-----PHYSICAL PROPERTIES-----

BOILING POINT, DEG F: 231 VAPOR PRESSURE, MM HG/20 DEG C: 22
MELTING POINT, DEG F: -195 VAPOR DENSITY (AIR=1): 3.2
SPECIFIC GRAVITY (WATER=1): 0.87 WATER SOLUBILITY, %: 0.05
APPEARANCE AND ODOR: COLOR- EVAPORATION RATE (BUTYL ACETATE=1): 2.0
LESS, CLEAR LIQUID; AROMATIC ODOR

-----FIRST AID MEASURES-----

IF INHALED: REMOVE TO FRESH AIR. GIVE ARTIFICIAL RESPIRATION IF NOT BREATHING. GET IMMEDIATE MEDICAL ATTENTION.

IN CASE OF EYE CONTACT: IMMEDIATELY FLUSH EYES WITH LOTS OF RUNNING WATER FOR 15 MINUTES, LIFTING THE UPPER AND LOWER EYELIDS OCCASIONALLY. GET IMMEDIATE MEDICAL ATTENTION.

PROD: 04758106 15:09:46 28 JUL 1989 CUST: 51101027 INVOICE: 510550482

TOLUENE

REVISION OF:01-10-89

IN CASE OF SKIN CONTACT: IMMEDIATELY WASH SKIN WITH LOTS OF SOAP AND WATER. REMOVE CONTAMINATED CLOTHING AND SHOES; WASH BEFORE REUSE. GET MEDICAL ATTENTION IF IRRITATION PERSISTS AFTER WASHING.

SWALLOWED: DO NOT INDUCE VOMITING. GET IMMEDIATE MEDICAL ATTENTION. VOMITING OCCURS SPONTANEOUSLY, KEEP VICTIM'S HEAD BELOW HIS HIPS TO PREVENT HIS BREATHING THE VOMITUS INTO HIS LUNGS.

-----HEALTH HAZARD INFORMATION-----

PRIMARY ROUTES OF EXPOSURE: INHALATION, SKIN OR EYE CONTACT.

SIGNS AND SYMPTOMS OF EXPOSURE

INHALATION: VAPORS AND MISTS IRRITATE MUCOUS MEMBRANES. INHALATION OF HIGHER CONCENTRATIONS MAY CAUSE HEADACHES, NAUSEA, VOMITING, AND COMA. INHALATION OF VERY HIGH CONCENTRATIONS OR PROLONGED EXPOSURE MAY CAUSE UNCONSCIOUSNESS. EXPOSURES AT CONCENTRATIONS UP TO 200 PPM GENERALLY PRODUCE NO SYMPTOMS. AT 200-500 PPM, HEADACHE, NAUSEA, EYE IRRITATION, LOSS OF APPETITE, A BAD TASTE, LASSITUDE, IMPAIRMENT OF COORDINATION AND REACTION TIME ARE REPORTED, BUT ARE NOT USUALLY ACCOMPANIED BY ANY LABORATORY OR PHYSICAL FINDINGS OF SIGNIFICANCE. WITH HIGHER CONCENTRATIONS, THE ABOVE COMPLAINTS ARE INCREASED AND, IN ADDITION, ANEMIA, LEUCOPENIA, AND ENLARGED LIVER MAY BE FOUND IN RARE CASES.

EYE CONTACT: LIQUID IS SEVERELY IRRITATING.

SKIN CONTACT: BRIEF CONTACT MAY DRY THE SKIN. PROLONGED OR REPEATED CONTACT MAY IRRITATE THE SKIN, CAUSING DERMATITIS.

SWALLOWED: SWALLOWING THE LIQUID MAY RESULT IN VOMITING. IF VOMITING OCCURS SPONTANEOUSLY, DO NOT ALLOW VOMITUS TO BE BREATHED INTO THE LUNGS AS EVEN A SMALL QUANTITY IN THE LUNGS MAY RESULT IN CHEMICAL PNEUMONITIS AND PULMONARY EDEMA/HEMORRHAGE.

CHRONIC EFFECTS OF EXPOSURE: PROLONGED OR REPEATED EXPOSURE TO HIGH CONCENTRATIONS MAY CAUSE LOSS OF APPETITE, NOSE BLEEDS, AND LIVER, KIDNEY, AND NEURAL DYSFUNCTION.

MEDICAL CONDITIONS GENERALLY AGGRAVATED BY EXPOSURE: PRE-EXISTING EYE, SKIN, AND RESPIRATORY DISORDERS.

-----TOXICITY DATA-----

ORAL: LD50 RAT = 5 G/KG

DERMAL: LD50 RABBIT = 14 G/KG

INHALATION: LC50 RAT = 8,000 PPM/4 HR

CARCINOGENICITY: THIS MATERIAL IS NOT CONSIDERED TO BE A CARCINOGEN BY THE NATIONAL TOXICOLOGY PROGRAM, THE INTERNATIONAL AGENCY FOR RESEARCH ON CANCER, OR THE OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION

OTHER DATA: WHILE THERE IS NO EVIDENCE THAT INDUSTRIALLY ACCEPTABLE LEVELS OF TOLUENE VAPORS (THE PEL OR TLV) HAVE PRODUCED CARDIAC EFFECTS IN HUMANS, ANIMAL STUDIES HAVE SHOWN THAT INHALATION OF HIGH LEVELS OF TOLUENE PRODUCED CARDIAC SENSITIZATION. SUCH SENSITIZATION MAY CAUSE FATAL CHANGES IN HEART RHYTHMS. THIS LATTER EFFECT WAS SHOWN TO BE ENHANCED BY HYPOXIA OR THE INJECTION OF ADRENALIN-LIKE AGENTS. RATS EXPOSED TO 1400 PPM OR 1200 PPM OF TOLUENE FOR 14 HR/DAY FOR 4 OR 5 WEEKS (RESPECTIVELY) EXHIBITED HIGH FREQUENCY HEARING DEFICITS. THE SIGNIFICANCE OF THIS INFORMATION TO MAN IS UNKNOWN.

-----PERSONAL PROTECTION-----

VENTILATION: LOCAL MECHANICAL EXHAUST VENTILATION CAPABLE OF MAINTAINING EMISSIONS AT THE POINT OF USE BELOW THE PEL.

RESPIRATORY PROTECTION: IF USE CONDITIONS GENERATE VAPORS OR MISTS, WEAR A NIOSH-APPROVED RESPIRATOR APPROPRIATE FOR THOSE EMISSION LEVELS.

PROD: 04758106 15:09:46 28 JUL 1989 CUST: 51101027 INVOICE: 510550482

TOLUENE

REVISION OF:01-10-89

APPROPRIATE RESPIRATORS MAY BE A FULL FACEPIECE OR A HALF MASK AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS/MISTS, A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE, OR A SUPPLIED-AIR RESPIRATOR.

EYE PROTECTION: CHEMICAL GOGGLES UNLESS A FULL FACEPIECE RESPIRATOR IS ALSO WORN. IT IS GENERALLY RECOGNIZED THAT CONTACT LENSES SHOULD NOT BE WORN WHEN WORKING WITH CHEMICALS BECAUSE CONTACT LENSES MAY CONTRIBUTE TO THE SEVERITY OF AN EYE INJURY.

PROTECTIVE CLOTHING: LONG-SLEEVED SHIRT, TROUSERS, SAFETY SHOES, RUBBER GLOVES, AND RUBBER APRON.

OTHER PROTECTIVE MEASURES: AN EYEWASH AND SAFETY SHOWER SHOULD BE NEARBY AND READY FOR USE.

-----FIRE AND EXPLOSION INFORMATION-----

FLASH POINT, DEG F: 40 FLAMMABLE LIMITS IN AIR, %
METHOD USED: TCC LOWER: 1.2 UPPER: 7.6
EXTINGUISHING MEDIA: USE WATER SPRAY, DRY CHEMICAL, FOAM, OR CO2. DO
NOT USE A DIRECT WATER STREAM.

SPECIAL FIRE FIGHTING PROCEDURES: FIRE FIGHTERS SHOULD WEAR SELF-CONTAINED BREATHING APPARATUS AND FULL PROTECTIVE CLOTHING. USE WATER SPRAY TO COOL NEARBY CONTAINERS AND STRUCTURES EXPOSED TO FIRE.

UNUSUAL FIRE AND EXPLOSION HAZARDS: AVOID ACCUMULATION OF WATER BECAUSE THIS PRODUCT WILL FLOAT ON WATER AND MAY REIGNITE ON THE SURFACE OF THE WATER.

UNUSUAL FIRE AND EXPLOSION HAZARDS: EXTINGUISH ALL NEARBY SOURCES OF IGNITION.

-----HAZARDOUS REACTIVITY-----

STABILITY: STABLE POLYMERIZATION: WILL NOT OCCUR
CONDITIONS TO AVOID: HEAT, SPARKS, AND OPEN FLAMES.

MATERIALS TO AVOID: OXIDIZING MATERIALS.

HAZARDOUS DECOMPOSITION PRODUCTS: MAY LIBERATE CARBON MONOXIDE, CARBON DIOXIDE, AND UNIDENTIFIED ORGANIC COMPOUNDS IN BLACK SMOKE.

-----SPILL, LEAK, AND DISPOSAL PROCEDURES-----

ACTION TO TAKE FOR SPILLS OR LEAKS: WEAR PROTECTIVE EQUIPMENT INCLUDING RUBBER BOOTS, RUBBER GLOVES, RUBBER APRON, AND A SELF-CONTAINED BREATHING APPARATUS IN THE PRESSURE DEMAND MODE OR A SUPPLIED-AIR RESPIRATOR. IF THE SPILL OR LEAK IS SMALL, A FULL FACEPIECE AIR-PURIFYING CARTRIDGE RESPIRATOR EQUIPPED FOR ORGANIC VAPORS MAY BE SATISFACTORY. IN ANY EVENT, ALWAYS WEAR EYE PROTECTION. EXTINGUISH ALL IGNITION SOURCES AND ENSURE THAT ALL HANDLING EQUIPMENT IS ELECTRICALLY GROUNDED. FOR SMALL SPILLS OR DRIPS, MOP OR WIPE UP AND DISPOSE OF IN DOT-APPROVED WASTE CONTAINERS. FOR LARGE SPILLS, CONTAIN BY DIKING WITH SOIL OR OTHER NON-COMBUSTIBLE ABSORBENT MATERIALS AND THEN PUMP INTO DOT-APPROVED WASTE CONTAINERS; OR ABSORB WITH NON-COMBUSTIBLE SORBENT MATERIAL, PLACE RESIDUE IN DOT-APPROVED WASTE CONTAINERS. KEEP OUT OF SEWERS, STORM DRAINS, SURFACE WATERS, AND SOIL. COMPLY WITH ALL APPLICABLE GOVERNMENTAL REGULATIONS ON SPILL REPORTING, AND HANDLING AND DISPOSAL OF WASTE.

DISPOSAL METHODS: DISPOSE OF CONTAMINATED PRODUCT AND MATERIALS USED IN CLEANING UP SPILLS OR LEAKS IN A MANNER APPROVED FOR THIS MATERIAL. CONSULT APPROPRIATE FEDERAL, STATE AND LOCAL REGULATORY AGENCIES TO ASCERTAIN PROPER DISPOSAL PROCEDURES.

NOTE: EMPTY CONTAINERS CAN HAVE RESIDUES, GASES AND MISTS AND ARE SUBJECT TO PROPER WASTE DISPOSAL, AS ABOVE.

-----SPECIAL PRECAUTIONS-----

PROD: 04758106 15:09:46 28 JUL 1989 CUST: 51101027 INVOICE: 510550482

TOLUENE

REVISION OF:01-10-89

HANDLING AND STORAGE PRECAUTIONS: KEEP AWAY FROM HEAT, SPARKS, AND FLAMES. STORE IN A COOL, DRY, WELL-VENTILATED PLACE AWAY FROM INCOMPATIBLE MATERIALS. VENT CONTAINER FREQUENTLY, AND MORE OFTEN IN WARM WEATHER, TO RELIEVE PRESSURE. ELECTRICALLY GROUND ALL EQUIPMENT WHEN HANDLING THIS PRODUCT AND USE ONLY NON-SPARKING TOOLS. KEEP CONTAINER TIGHTLY CLOSED WHEN NOT IN USE. DO NOT USE PRESSURE TO EMPTY CONTAINER. WASH THOROUGHLY AFTER HANDLING. DO NOT GET IN EYES, ON SKIN, OR ON CLOTHING.

REPAIR AND MAINTENANCE PRECAUTIONS: DO NOT CUT, GRIND, WELD, OR DRILL ON OR NEAR THIS CONTAINER.

OTHER PRECAUTIONS: CONTAINERS, EVEN THOSE THAT HAVE BEEN EMPTIED, WILL RETAIN PRODUCT RESIDUE AND VAPORS. ALWAYS OBEY HAZARD WARNINGS AND HANDLE EMPTY CONTAINERS AS IF THEY WERE FULL.

-----FOR ADDITIONAL INFORMATION-----

CONTACT DOUGLAS EISNER, TECHNICAL DIRECTOR, VAN WATERS & ROGERS INC.
DURING BUSINESS HOURS, PACIFIC TIME (206)447-5911

-----OTHER REGULATORY INFORMATION-----

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT IS A TOXIC CHEMICAL SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372.

-----OTHER REGULATORY INFORMATION-----

DO NOT DETACH THIS SECTION FROM THE MSDS AND BE SURE TO INCLUDE THIS SECTION WHEN COPYING THE MSDS.

THIS PRODUCT CONTAINS THE FOLLOWING TOXIC CHEMICAL(S) SUBJECT TO THE REPORTING REQUIREMENTS OF SECTION 313 OF TITLE III OF THE SUPERFUND AMENDMENTS AND REAUTHORIZATION ACT OF 1986 AND 40 CFR PART 372:

NAME	CAS NO.	%, WT
------	---------	-------

THIS PRODUCT CONTAINS THE FOLLOWING CHEMICAL(S) CONSIDERED BY THE STATE OF CALIFORNIA'S SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT OF 1986 (PROPOSITION 65) AS CAUSING CANCER OR REPRODUCTIVE TOXICITY AND FOR WHICH WARNINGS ARE NOW REQUIRED:

CHEMICAL	CAS NO.
BENZENE	71-43-2

-----NOTICE-----

VAN WATERS & ROGERS INC. ("VW&R") EXPRESSLY DISCLAIMS ALL EXPRESS OR IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, WITH RESPECT TO THE PRODUCT OR INFORMATION PROVIDED HEREIN.

ALL INFORMATION APPEARING HEREIN IS BASED UPON DATA OBTAINED FROM THE MANUFACTURER AND/OR RECOGNIZED TECHNICAL SOURCES. WHILE THE INFORMATION IS BELIEVED TO BE ACCURATE, VW&R MAKES NO REPRESENTATIONS AS TO ITS ACCURACY OR SUFFICIENCY. CONDITIONS OF USE ARE BEYOND VW&R'S CONTROL AND THEREFORE USERS ARE RESPONSIBLE TO VERIFY THIS DATA UNDER THEIR OWN OPERATING CONDITIONS TO DETERMINE WHETHER THE PRODUCT IS SUITABLE FOR THEIR PARTICULAR PURPOSES AND THEY ASSUME ALL RISKS OF THEIR USE, HANDLING, AND DISPOSAL OF THE PRODUCT, OR FROM THE PUBLICATION OR USE OF, OR RELIANCE UPON, INFORMATION CONTAINED HEREIN. THIS INFORMATION RELATES ONLY TO THE PRODUCT DESIGNATED HEREIN, AND DOES NOT RELATE TO ITS USE IN COMBINATION WITH ANY OTHER MATERIAL OR IN ANY OTHER PROCESS.

-----REVISION-----

PROD: 04758106 15:09:46 28 JUL 1989 CUST: 51101027 INVOICE: 510550482

TOLUENE

REVISION OF: 01-10-89

08/87: REPORTED ADDITIONAL PERSONAL EXPOSURE LIMITS.

12/88: ADDED OTHER REGULATORY INFORMATION.

**** E N D O F M S D S ****

PROD: 04758106 15:09:46 28 JUL 1989 CUST: 51101027 INVOICE: 510550482